UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, RIDGE TILL

(Acre)

CODE 329C

DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface year-round, while growing crops on preformed ridges alternated with furrows protected by crop residue.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- Reduce sheet and rill erosion.
- Reduce wind erosion.
- Maintain or improve soil organic matter content and tilth.
- Modify cool wet site conditions.
- Provide food and escape cover for wildlife

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This standard includes tillage and planting methods commonly referred to as ridge till or ridge planting. It does not include no till planting on ridges, or bedding or listing operations that bury crop residues.

CRITERIA

General Criteria Applicable to All Purposes Named Above

Following crop harvest and any secondary residue removal, residues shall be maintained until planting with no additional disturbance except for normal weathering.

Ridge height shall be maintained throughout the harvest and winter seasons by controlling equipment or livestock traffic.

After planting, residues shall be maintained in the furrows until the ridges are rebuilt by cultivation. Ridges shall be rebuilt to their original height and shape during the last row cultivation.

Loose residues to be retained on the field shall be uniformly distributed on the soil surface. Combines shall be equipped with straw spreaders capable of redistributing residue over at least 80 percent of the working width of the header. Cultivation and planting equipment designed to operate on ridges shall be used, such as cultivators equipped with ridge-building attachments, and planters equipped with ridge-planting attachments such as row-cleaning devices and guidance systems.

A minimum of 30 percent of the soil surface shall be covered by plant residue immediately following the planting of the crop. (Additional crop residue is often needed to reduce soil erosion levels to the soil loss tolerance ("T") value, increase soil organic matter content, improve water quality, and to meet other resource objectives.)

Stable Outlets. Stable outlets must exist where ridges direct runoff to areas of concentrated flow. *Grassed waterways, water and sediment control basins, underground outlets*, or other suitable practices can be used to protect these areas.

Maximum Row Grade. Row grades shall not exceed —

10-Year EI	Maximum Row Grade (%)[1]
100 – 150	7
>150	6

[1] Based on existing water erosion prediction technology.

If irrigation is used with this practice, use the row grade limitation for the next higher 10-year storm EI value. Where residue cover is less than 30 percent, use the maximum row grade for the next higher 10-year storm EI value.

Additional Criteria to Reduce Sheet and Rill Erosion

The amount and placement of residue needed, and the orientation of ridges in relation to the contour, shall be determined using current approved erosion prediction technology. Calculations shall account for the effects of other practices in the conservation management system. Partial removal of residue by means such as baling or grazing, shall be limited to retain the amount needed.

Planting and fertilizer placement shall disturb no more than one third of the row width. Soil and residue removed from the top of the ridge shall be moved into the furrow between the ridges. After planting, the top of the ridge shall be maintained at least 3 inches higher than the furrow between the ridges.

The ridge shall be shaped to prevent erosion along the row by directing runoff to the protected furrow area.

Additional Criteria to Reduce Wind Erosion

Maintaining residue cover during critical periods of the growing season can reduce crop damage caused by wind erosion. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed to reduce wind erosion damages.

Additional Criteria to Maintain or Improve Soil Organic Matter Content and Tilth

The amount of residue needed to achieve the desired soil condition, shall be determined using the current approved soil conditioning index procedure. Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed. Calculations shall account for the effects of other practices in the conservation management system.

Cultivation to rebuild ridges shall be done using tools that maintain residues in the surface layer.

Additional Criteria To Modify Cool Wet Site Conditions

Ridge height prior to planting shall not be less than 6 inches. After planting, the top of the ridge shall be maintained at least 3 inches higher than the furrow between the ridges.

Additional Criteria to Provide Food and Escape Cover for Wildlife

The amount of residue and height of stubble needed to provide cover during winter months shall be determined using an approved habitat evaluation procedure. Residues shall not be removed unless it is determined by the habitat evaluation procedure that removal will not adversely affect habitat values. Stubble shall be maintained standing over winter.

CONSIDERATIONS

Burning of plant residue or excess removal of residue by such means as baling or grazing often produces negative impacts on resources. These activities should not be performed without full evaluation of impacts on soil, water, animal, plants, and air resources.

Ridge till may be practiced continuously throughout some crop sequences, or may be managed as part of a residue management system which includes other tillage and planting methods such as mulch till or no till. In mixed systems, ridges must be periodically re-established.

Production of adequate amounts of crop residues necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, and adjustment of plant populations and/or row spacings.

By providing a choice of weed control methods, this practice can reduce herbicide requirements when used in a conservation management system.

Where improvement of soil tilth is a concern, continuous ridge planting will allow organic material to accumulate in the surface horizon.

Reconstruction of ridges in the same row area year after year will maximize organic matter buildup and biological activity in the row.

Soil compaction may be reduced by controlled traffic, where wheel traffic from all operations is limited to the area between designated rows or traffic areas.

Burndown herbicides should be applied at least two weeks prior to planting of the next crop to reduce competition from weeds and other vegetation for soil moisture and nutrients.

To achieve a desired crop stand good seed to soil contact is needed. Proper adjustment of planting equipment is required in all residue management systems.

Crop rotation of all crops (including cover crops) is needed to aid in pest control. Follow proper soil testing, nutrient management, Integrated Crop Management (ICM), and Integrated Pest Management (IPM) techniques.

Leaving rows of unharvested crop standing at intervals across the field can enhance the value of residues for wildlife habitat.

Follow NRCS state policy for considering cultural resources during planning and maintenance.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance described in this standard. Specifications shall be recorded using approved specification sheets, guide sheets, narrative statements in the conservation plan, or other acceptable documentation.

Residue amounts will be determined using the line transect method as described in the National Agronomy Manual.

OPERATION AND MAINTENANCE

All pesticides used in residue management shall be labeled for their intended use and recommendations will be in accordance with the directions and guidelines of the Alabama Cooperative Extension System.

REFERENCES

ALABAMA PEST MANAGEMENT HANDBOOK; ACES, Current Edition

SOIL TEST FERTILIZER RECOMMENDATIONS FOR ALABAMA; AUBURN UNIVERSITY, AGRONOMY AND SOILS DEPARTMENT, Publication # 178, May, 1994

NATIONAL AGRONOMY MANUAL

REVISED UNIVERSAL SOIL LOSS EQUATION; Section I FOTG